College of Public Health & Health Professions

HSA 7708: Health Services Research Methods II
Spring 2015
Monday 9:35-11:30 and Wednesday 9:35-10:25, HPNP G105

Instructor Information:
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Office Hours: by appointment

Course Objectives: This course is designed to provide a review and appraisal of health services research methods and will focus on quantitative research methodologies for observational studies.

Required Texts:
Wooldridge, J. *Introductory Econometrics (3rd Ed.)* Thompson Southwestern. 2006.
Maddala, G. *Limited Dependent & Qualitative Variables in Econometrics*. Cambridge University Press. 1983.
Rudas, T. *Probability Theory: A Primer*. Series: Quantitative Applications in the Social Sciences. Sage University Paper #142. 2004
Additional Readings, as assigned. These will be made available for students.

Required Materials:
STATA statistical software (any version)
Other statistical software such as SAS, R, or SPSS can be used for assignments but technical support will only be provided for STATA.

Recommended Supplementary Texts:
Kennedy, P. *Guide to Econometrics (4th Ed.)* The MIT Press. 1998.
Gujarati, D. *Basic Econometrics (4th Ed.)* McGraw-Hill. 2003.
Greene, W. *Econometric Analysis (5th Ed.)* Prentice-Hall. 2002.
Simon, C. and Blume, L. *Mathematics for Economists*. W.W. Norton & Co. 1994.
STATA Reference Manuals

Evaluation:
The course grade will be based on two examinations, and computer projects.

> Exams: A mid-term and cumulative final exam will be given. These are "take-home" essay exams. Consultation with classmates is *not* allowed. All other sources of information available to you (library, books, class notes, internet) are allowed.

Application: One purpose of this course is to acquaint students with general econometric and statistical techniques that will be useful in future research and introduce the statistical issues inherent in doing HSR. For practical experience, students will apply alternative least squares regression methods, diagnostics, and tests to a data set on health care utilization and expenditures. Students will meet with the instructor individually throughout the term as the data analyses proceed.

Grading:

Mid-Term Exam	35%	-- Week of February 23
Final Exam	40%	-- Week of April 20
Computer Exercises	25%	-- Throughout the term

Grading Scale:

A:	93 – 100%
A-:	90 – 92%
B+:	87 – 89%
B:	83 – 86%
B-:	80 – 82%
C+:	75 – 79%
C:	70 – 74%
C-:	65 – 69%
Fail:	Below 65%

Academic Integrity – *Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or these web sites for more details:*

http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php

http://www.dso.ufl.edu/studenthandbook/studentrights.php

http://gradschool.ufl.edu/students/introduction.html

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior. We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

Policy Related to Class Attendance and Make-up Exams or Other Work

Students are expected to attend and participate in all class sessions and be in attendance prior to the beginning of the class period. Students should inform the instructor if they will miss a class. Personal issues with respect to class attendance or fulfillment of course requirements will be handled on an individual basis.

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (http://www.dso.ufl.edu/). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance at the UF Counseling & Wellness Center, 352-392-1575. Visit their web site for more information: http://www.counseling.ufl.edu/.

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: www.health.ufl.edu/shcc

Crisis intervention is always available 24/7 from:

Alachua County Crisis Center:

(352) 264-6789
http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx

BUD – *Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance*.

COURSE OUTLINE

Topic 1: Health Services Research Methods: Why learn econometrics? (Week 1)
- Descriptive vs. Multiple Regression Analysis: Wooldridge (Chapter 1)
- Validity in Research
- Primer in probability theory: Rudas (whole book)

Topic 2: Models and Modeling (Week 2)

Topic 3: Properties of OLS Estimators (Week 3)
- Wooldridge (Chapter 2)

Topic 4: Violation of OLS Assumptions (Weeks 4-7)
- Non-normal Errors: Wooldridge (Chapter 3)
- Functional Form: Wooldridge (Chapter 3, Chapter 6, Chapter 9)
- Heteroskedasticity and Autocorrelation: Wooldridge (Chapter 8, Chapter 12)
- Missing Data, Measurement Error, and Stochastic Regressors: Wooldridge (Chapter 9)

MIDTERM EXAM: Topics 1-4

Topic 5: Discrete Dependent Variables (Weeks 8-10)
- Introduction: Maddala (Chapter 2.1)
- Binary Dependent Variables (Linear Probability Model, Logit, Probit, Grouped Logit): Maddala (Chapter 2.2, 2.5, 2.8-2.9), Wooldridge (Chapter 7, Chapter 17)
- Polychotomous Dependent Variables
    - Ordered (Ordered Logit, Ordered Probit) Maddala (Chapter 2.13)
    - Unordered (Multinomial Logit, Conditional Logit, Nested Logit, Multinomial Probit) Maddala (Chapter 3.1-3.6)
- Count Data Models (Poisson Regression, Negative Binomial Regression) Maddala (Chapter 2.15), plus Gardner, Mulvey, and Shaw "Regression analysis of counts and rates: poisson, overdispersed poisson, and negative binomial models," *Psychological Bulletin* 118(3): 392-304, 1995.

Topic 6: Models with Censored Data (Weeks 11-12)
- Tobit and Two-Part Models – observed censoring: Maddala (Chapter 6.1-6.7)
- Sample Selectivity Models – unobserved censoring: Maddala (Chapters 6.9-6.16, 9)
- Propensity Scores - Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*(1), 41-55.
- Difference-in-Difference Models: Harman et al. Changes in per member per month expenditures after implementation of Florida's Medicaid Reform Demonstration. *Health Services Research* 46(3): 787-804, 2011.

Topic 7: Other Modeling Tools: (Weeks 13-14)
- Simultaneous Equations: Maddala (Chapter 7), Wooldridge (Chapter 16)
- Hierarchical Linear Models: Suggested Reading -- Bryk and Raudenbush (1992) *Hierarchical Linear Models*; J.J. Hox (1995) *Applied Multilevel Models*; Singer (1998) "Using SAS PROC MIXED to Fit Multilevel Models, Hierarchical Models, and Individual Growth Models" *Journal of Educational and Behavioral Statistics*, 24(4):323-355

Topic 8: Review of Models, Modeling, and Applications (Week 15-16)
- Critical Review of Literature
- Course Review

FINAL EXAM: Topics 1 - 8